

REMARKS

In accordance with the foregoing, claims 1-4, 12, and 13, are amended. Claim 15 is added. No new matter is added. Claims 1-15 are pending and under consideration.

CLAIM REJECTIONS UNDER 35 U.S.C. §112

Claims 1-4 are amended herewith to enhance the form and correct the noted informalities. In view of the claim amendments, Applicants respectfully request withdrawal of the rejections.

CLAIM OBJECTION

Claim 12 is amended herewith to become an independent claim. In view of the claim amendments, Applicants respectfully request the objection to be withdrawn.

CLAIM REJECTION UNDER 35 U.S.C. §102

Claim 1 is rejected under 35 U.S.C. §102(b) as being anticipated by the article "*PMD-induced BER penalties in optically-amplified IM/DD lightwave systems*" by Morkel et al. (hereinafter "Morkel").

Morkel describes the theoretical and experimentally observed relation between the polarization-mode dispersion (PMD) generated while the signal to noise ratio (SNR) is maintained at a fixed, predetermined value, and the Q penalty (which is an increase in the bit error rate BER).

Claim 1 is directed to monitoring an optical signal to noise ratio which is determined based on a measured degree of polarization (DOP).

Morkel does not anticipate "measuring a degree of polarization of an optical signal transmitted in an optical transmission system" as recited in claim 1. Morkel uses the PDM which is not the same as DOP. The difference between the PMD and the DOP is illustrated in FIGS. 5A and B, and discussed on page 10, line 28, through page 11, line 9 of the specification. Since according to claim 1, the SNR is determined based on measuring DOP and not based on the PMD as in Morkel, the SNR can be measured even when the optical system includes means to compensate the PMD.

Further, Morkel does not anticipate "determining an optical signal to noise ratio of said optical signal based on a measured value of said degree of polarization" as recited in claim 1. In

Morkel, the SNR is a controlled quantity, maintained at a predetermined value. In contrast, claim 1 recites the SNR being determined based on the measured DOP.

CLAIM REJECTION UNDER 35 U.S.C. §103

Claims 1-6, and 12 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,859,268 to Chou et al ("Chou"), in view of Morkel.

Relative to claims 1 and 4, in the last paragraph at the bottom of page 2, the Office Action submits that Chou does not disclose "an optical SNR calculation section that determines an optical signal to noise ratio of said optical signal based on a measured value of the degree of polarization obtained in said degree of polarization measuring section" but relies on Morkel to provide the missing feature. However, as discussed above, Morkel does not teach or suggest determining the SNR based on the DOP. In Morkel, the SNR is maintained constant, and the Q penalty (increase of the BER) is determined in relation to the PMD which is different from the DOP. Therefore, Chou and Morkel alone or in combination, fail to teach or suggest all the elements of claims 1 and 4 so that claims 1 and 4 patentably distinguish over the cited prior art¹.

Claims 7-10 are rejected under 35 U.S.C. §103(a) as being unpatentable over Chou, in view of Morkel, and further in view of U.S. Patent No. 6,512,612 to Fatehi et al ("Fatehi").

Claim 11 is rejected under 35 U.S.C. §103(a) as being unpatentable over Chou, in view of Morkel and Fatehi, and further in view of U.S. Patent No. 6,514,273 to Suzuki ("Suzuki").

Claims 13 and 14 are rejected under 35 U.S.C. §103(a) as being unpatentable over Chou, in view of Morkel, and further in view of U.S. Patent No. 6,885,820 to Eder et al ("Eder").

Fatehi, Suzuki and Eder alone or in combination do not correct or compensate for the above identified failure of Chou and Morkel in teaching or suggesting all the features of independent claims 1 and 4.

Dependent claims 2, 3, 5-11, 13, and 14 are also patentable at least by inheriting patentable features from claims 1 and 4 from which they depend, respectively.

Amended independent claim 12 is patentable at least because the cited prior art fails to teach or suggest "an optical signal to noise ratio calculation section which determines an optical signal to noise ratio of said optical signal, based on the measured value of the degree of

¹ See MPEP 2142 stating, as one of the three "basic criteria [that] must be met" in order to establish a *prima facie* case of obviousness, that "the prior art reference (or references when combined) must teach or suggest all the claim limitations," (emphasis added). See also MPEP 2143.03: "All words in a claim must be considered in judging the patentability of that claim against the prior art."

polarization obtained by the degree of polarization measuring device in said automatic polarization mode dispersion compensation apparatus.”

NEW CLAIM 15

New claim 15 is directed to a method of monitoring a signal to noise ratio of an optical signal transmitted in an optical system. The claim is fully supported by the originally filed specification, and is patentable at least by reciting “determining the signal to noise ratio of the optical signal based on a measured value of a degree of polarization of said optical signal.”

CONCLUSION

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

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By: LTodor
Luminita A. Todor
Registration No. 57,639

1201 New York Avenue, NW, 7th Floor
Washington, D.C. 20005
Telephone: (202) 434-1500
Facsimile: (202) 434-1501